

Chapter 10 - Land Resources

Introduction

This chapter focuses on WEPCO's property and potential impacts on the natural resources that are part of its landscape.

The chapter consists of six main sections, beginning with a description of the existing environment on WEPCO's property, followed by a discussion of the potential impacts on the OCPP property in general. Then, three sections follow describing potential impacts for the North Site, the South Site, and the South Site Exp. The last section discusses the railroad corridor. A description of the potential impacts of the CUP Option are included in Chapter 12.

The landscape on WEPCO's property is biologically significant, serving an important role in the plant and wildlife ecological systems along that section of Lake Michigan shoreline. Interspersed with the existing power plant facilities is a diversity of habitats and environments. Lake Michigan bluffs extend 80 to 100 feet above the shoreline. Ravines carved out by streams flow into Lake Michigan, draining the OCPP property, other properties, and farmlands to the west. Habitats represented within the property include old farm fields, woodlands, wetlands, riparian areas, lakeshores, beaches, bluffs, and grasslands. Areas within WEPCO's property range in type from tracts of land with minimal human disturbance to former landfills, now serving as important habitat for grassland birds. These lands are home to numerous plant communities, mammals, reptiles, amphibians, and wintering and migrating birds. Though no federally protected species were found within the project area, several state endangered/threatened species are documented.

Despite the fact that no virgin forest areas exist on WEPCO's property and that many areas have experienced some degree of disturbance from past and current land use, the property has continued to contain significant habitat for numerous species. Two large blocks of habitat, designated by the Southeastern Wisconsin Regional Planning Commission (SEWRPC) as primary environmental corridors (PECs), have been fragmented to some extent by the existing power plant. PECs are complex ecosystems that link blocks of environmentally sensitive habitats providing protection for migrating and breeding wildlife. These natural resources are part of the larger PECs that extend along the Lake Michigan shoreline to the north and south. They include uplands, wetlands, fields, and forested habitats, and they surround the streams that cut inland beyond the shoreline. SEWRPC-designated Critical Species Habitats (CSHs) are environments that provide long-term support of state-listed rare, threatened, and/or endangered species. The northern PECs contains three Critical Species Habitat areas. The southern PEC contains the SEWRPC-designated Ravine Woods

Natural Area, a biological and environmental resource of local significance that contains intact native plant and animal communities.

Outside of the PEC areas, SEWRPC has identified a total of six Isolated Natural Resource Areas (INRAs) which contain four additional CSHs. INRAs are defined by SEWRPC as areas between five and 100 acres in size and at least 200 feet wide. They contain some key environmental features but are not connected to the larger environmentally significant blocks. The designated INRAs on WEPCO's property are important because of the quality of plant communities and the habitat they provide for state endangered/threatened species. One of the property's more significant INRAs is the large wooded parcel located inside the northern edge of the existing rail track. It is designated as both an INRA and a CSH because the train tracks physically separate it from the other environmental corridors and it contains state-protected species. A part of this woodland is dominated by large beech trees (with diameters more than 30 inches) and a well-developed understory of diverse woodland flora.

Later in this chapter, the PECs, CSHs, INRAs, and other notable biological areas are discussed in more detail.

The first sections of this chapter describe the topography, geology, vegetation, wildlife, and archeology of the OCPP/ERGS property. This is followed by an analysis of the potential impacts of the proposed ERGS on those same property characteristics.

Existing Environment - WEPCO's Property

Topography

The proposed sites for the ERGS are all within the Eastern Ridges and Lowlands Geographical Province of the state.¹⁰⁶ Surface topography depends on the occurrences and types of glacial till that overlies the bedrock in the area. Elevations in the region range from 580 feet above mean sea level (msl) at Lake Michigan to 1,280 feet msl in Washington County. Bluffs are commonly developed along the Lake Michigan shoreline.

Natural erosion of the bluffs occurs on this side of Lake Michigan. The underlying cause of bluff erosion is erosion of the toe of the bluff and the near shore lake bed caused by the action of waves on Lake Michigan. The surface erosion on the face of the bluffs occurs because the soil slopes above respond to the erosion stress below at the toe of the bluff. This is compounded by surface and groundwater flow on the bluff. If the underlying retreat of the toe of the bluff is halted, the bluff erosion eventually reaches a naturally stable rate and the slope and configuration come into dynamic equilibrium with the forces of erosion. As the bluff slope stabilizes, a process of natural re-vegetation occurs. Naturally stabilized and vegetated bluffs can be found in many locations along the lakefront where toe erosion has been stopped or is not currently a factor. Milwaukee County is utilizing this natural process for the southern portion of Bender Park, just north of the OCPP property.

The land designated for the SCPC units at both the North and South sites would be primarily on what is currently a bluff about 100 feet above the Lake Michigan shore. The shore is at about 580 to 590 feet above

¹⁰⁶ Martin, Lawrence. *The Physical Geography of Wisconsin*. University of Wisconsin Press, Madison.

msl. The first 100 to 350 feet of land west of the lakeshore along the length of WEPCO's property is relatively flat and about 20 feet above lake level. Westward from there, the land climbs the bluff that is parallel to the lakeshore. Elevations above the bluff are about 700 feet above msl in the areas of the proposed sites. Existing topography of the WEPCO property is shown in Figure Vol. 2-12.

South and west of the operating South OCPP, the bluff has less relief, rising from about 610 to about 670 feet above msl. From there westward, the increase in elevation is more gradual to the switchyard, rail tracks, and coal unloading facilities.

Two large ravines extend from the bluff top to the lakeshore. The northern one contains the existing OCPP access road. The other ravine, located south of the existing shooting range property, is the Ravine Woods Natural Area, discussed later in this chapter. No new construction is planned for this area.

A berm about 50 feet high has been built between WEPCO's property and the current shooting range. At the lake side, it slopes all the way to the shore, a drop of about 130 feet over a distance of about 350 feet.

Three landfills create another set of prominent topographical features. The North Oak Creek Landfill is now closed and appears north of Elm Road as a flat-topped pad of grassy land about ten feet or more above surrounding woodlands and wetlands. The South Oak Creek Landfill is also closed and appears as a larger flat-topped pad south of Elm Road, about 50 feet above the surrounding grade at its highest point. The top of this landfill is at about 740 feet above msl. The Caledonia Landfill is currently operating south of the South Oak Creek Landfill with some land built up beyond 700 feet above msl.

Geology

Rock

Regional geology on the property consists of unconsolidated quaternary glacial deposits over gently sloping, sedimentary bedrock layers. The glacial deposits are quite thick, as discussed below. The bedrock formations lie on the western side of a large structural basin (the Michigan Basin) and slope to the east at approximately 10 to 15 feet per mile. The uppermost bedrock formation is the Silurian Niagara Dolomite. The aquifer in this dolomite is the major source of drinking water for domestic wells in the area. The formation varies in thickness because of variations in erosion of its upper surface, but overall it is relatively thin beneath the project sites (about 75 to 100 feet thick). Below the Niagara Dolomite is the Ordovician Maquoketa Shale, a 200-foot thick dolomitic shale layer that acts as an "aquitard" between the Niagara aquifer and the deeper sandstone aquifers. An aquitard slows the movement of water between surrounding aquifers. The sandstone layers under the aquitard are the St. Peters Sandstone, the Fanconia and Galesville sandstones, and the Mount Simon Sandstone. The aquifer in these Ordovician-Cambrian sandstones is often tapped for industrial and public water supplies.

Glacial till

Glacial drifts overlie most of southeastern Wisconsin. These deposits consist primarily of unsorted glacial till, deposited as ground and end moraines, and of sorted and stratified outwash and glacial lake deposits. Ground moraine covers much of the region and is composed primarily of clayey, silty till with deposits of stratified sand and gravel. End moraines, consisting primarily of till, form discontinuous bands of hills

paralleling Lake Michigan. This series of end moraines are collectively known as the Lake Border Morainic System.

Glacial lake deposits of clay, silt, and sand deposits occur along the shores of Lake Michigan and in the depressions between end moraines. The glacial deposits of the Oak Creek Formation consist of fine-grained calcareous till and are believed to be derived from sediments scoured from the glacial Lake Milwaukee basin. This formation is approximately 200 feet thick and may include sand seams within the finer silt-clay matrix. The mineral illite accounts for more than 70 percent of the clay-sized fraction. The Oak Creek till contains characteristic shale pebbles apparently derived from erosion of the Maquoketa shale in what is now the Lake Michigan basin.

Soils

Major soils series

There are two main soil series in the vicinity of each ERGS site option: the Morley silt loam covers about 90 percent of the OCPP property, and the Blount silt loam covers a smaller portion. Both appear to be series that could include wetlands.

Soils in the Morley series are well-drained silty soils over calcareous silty clay loam glacial till. The surface layer is about four inches thick and dark grayish-brown silt loam. The subsurface layer is brown silt loam also about four inches thick. The subsoil is about 20 inches thick. The Morley soils have moderately slow permeability and high available water capacity. The groundwater is less than five feet below the surface in wet periods. Runoff is medium and the hazard for erosion is slight. Slopes range from 2 to 12 percent. The Morley soils generally occur with somewhat poorly drained Blount soils.

Soils in the Blount series are somewhat poorly drained and nearly level. The soils have formed in a thin layer of silt and in calcareous silty clay loam glacial till. The surface layer is about three inches thick, a very dark grayish-brown silt loam. The subsurface layer is about five inches thick and is brown silt loam. The subsoil is about 26 inches thick. The Blount soils have moderately slow permeability and high available water capacity. Groundwater is less than three feet below the surface in wet periods. Runoff is slow and erosion is not a hazard. Slopes range from 1 to 3 percent.

Shooting range property

Because this property is not owned by WEPCO, but is part of one of the proposed sites (South Site-Exp) described in the application, it is covered in all discussions related to how the property appears currently and how it would be affected by construction of the ERGS facilities on the South Site-Exp option.

The shooting range property is a target range consisting of a relatively flat area at the top of the lakeshore bluff, sloping approximately 1.5 percent to the southeast, with three berms up to 60 feet in height built on its north, east, and south borders. The eastern berm is located immediately above the natural coastline bluff. The other two, smaller, berms extend east to west through the middle of the target range.

The target range was constructed in the 1940s for weekend National Guard and Army unit training. At that time, the Oak Creek and Caledonia area was relatively unpopulated. Consequently, the range was not constructed with safety berms. Safety berms were determined necessary when the area became more populated and the firing distance of the weapons lengthened. In 1964, the WEPCO reached an agreement

with the National Guard to construct berms and bunkers of compacted fly ash on the north, east, and south sides of the property. The berms were covered with approximately two feet of soil for vegetation growth and seeded in 1972. Low areas on the site were also filled with ash, and drainage ditches and culverts were installed to drain surface water in the area. In all, about 1,000,000 tons of fly ash and bottom ash were placed at the site.

In 1996 and 1997, improvements were constructed to mitigate erosion including: grading of berm, lakeshore bluff, and ravine slopes; covering of ash berms with soil; installing groundwater and stormwater drainage systems; installing a bluff protection system; and restoring the site vegetation and roads.

If the South Site-Exp were selected by the Commission in the CPCN process, construction on the government-owned, 70-acre shooting range property might reveal one or a number of contamination situations that would need to be managed in accordance with regulatory requirements. An environmental assessment by STS Consultants Ltd. (STS), in 1994 commissioned by the Department of Military Affairs (DMA), showed that the property still has berms constructed of fly ash and bottom ash that was hauled to the site from the OCPP. These assessments also document that demolition materials have been found at the site. No asbestos has been found in sampled areas, but could exist in demolition materials elsewhere. Metals, including lead, from weapons casings, shot, and bullets fired at the site may have had an effect on the quality of the soils. Petroleum contamination was discovered in the mid-1990s and was remediated at that time. An existing groundwater drainage system on the site has the potential to affect the surface water quality of Lake Michigan. The site may be affected, in turn, by the railroad line located west of the site.

In 2000, following remedial actions, STS issued a report documenting field observations and test results for site improvements completed in 1996 and 1997. The work conducted by STS appears to meet or exceed the level of investigation required for a Phase II environmental assessment effort. At WEPCO's request, a Phase I investigation has been completed by Natural Resource Technology (NRT) to determine if the site was used for activities other than a rifle range or had environmental conditions beyond those already known by WEPCO and documented by the STS reports. It turned up no evidence that the property was used for industrial activity or any other non-residential or non-agricultural purposes, so the results of the STS work appear to characterize the condition of the target range accurately. The property is identified in the Registry of Waste Disposal Sites in Wisconsin.

Designated biological areas

Primary environmental corridors

WEPCO's property has two large blocks of habitat, totaling 200 acres near the lakeshore, identified as Primary Environmental Corridor (PEC) by SEWRPC. These are shown in Figures Vol. 2-14, 2-16, and 2-18. Corridors are linear habitat areas that provide general habitat and link blocks of habitat together as avenues for wildlife travel and plant and seed dispersal. These corridors provide cover, food, and protection from weather and predators for resident wildlife and for traveling wildlife. Corridors linking habitat areas increase the potential for genetic variability within plant and animal species and populations, improving their ability to respond to changes in habitat.

A corridor's size, shape, and location dictate its importance to wildlife. SEWRPC describes primary environmental corridors to include a wide variety of the most important natural resource and resource-

related elements and to be at least 400 acres in size, two miles long and 200 feet wide. Corridors narrower than 200 feet in width are less valuable to wildlife due to the relatively high amount of edge habitat.

Corridors, like habitat blocks, contain edge and interior portions. Corridors with more edge habitat than interior habitat are more suitable as general habitat for edge species (e.g. raccoons, skunks, and white-tail deer) and not for area-sensitive species. On WEPCO's property, the area-sensitive species are mainly birds and amphibians. Impacts to area-sensitive birds include increased nest predation and cowbird nest parasitism. The main impact to amphibians is increased predator pressure.

Corridors help to link habitat blocks and allow wildlife to find mates, food, nesting or den sites, and cover. If these corridors are reduced in size or interrupted, some wildlife species (ovenbirds or salamanders, for example) could be prevented from traveling to other habitat blocks. A reduction in corridor size may allow predators to range deeper into the corridor. An interruption in the corridor may prevent an animal from traveling to the next habitat block because of increased exposure to dangers such as hawks, cars, or extreme temperature or moisture variations.

The two PEC blocks on WEPCO's property, as shown in Figures Vol. 2-14, 2-16, and 2-18, are part of a larger PEC that runs along the Lake Michigan shoreline. The corridors on the property are made up of hardwood woodlands, old field, and wetlands. The corridor on the OCPP property is mainly used as a travel corridor by mammals and birds. All forms of wildlife -- birds, mammals, reptiles, amphibians, and insects, for example -- use the corridor blocks as habitat as well.

Natural areas

The OCPP property contains one Natural Area as designated by SEWRPC¹⁰⁷ and identified in the Natural Heritage Inventory, the Ravine Woods Natural Area. Located within the southern PEC and south of the Rifle Range property, it contains native plant and animal communities, a waterway, higher species diversity, and is of significant size.

Isolated natural resource areas

There are six INRAs scattered throughout the property, some containing CSHs. INRAs are used by SEWRPC to describe isolated quality areas that provide habitat for endangered/threatened species or species of special concern; or areas that have been so little modified by human activity that they contain intact native plant and animal communities believed to be representative of pre-European settlement landscape. The designated sites on the OCPP property are important due to quality of plant communities and the habitat they provide for state endangered/threatened species. There is no specific protection for these areas through the state or federal government.

Critical species habitat

Areas designated as CSH by SEWRPC are located within the PECs and INRAs. They consist of tracts of land or water that support federally or state-listed rare, threatened, or endangered plant or animal species. These areas contain the necessary components of habitat for long-term support of critical species population.

¹⁰⁷ SEWRPC, Regional Natural Areas and Critical Species Habitat Protection and Management Plan for Southeastern Wisconsin, Sept., 1997.

Habitat fragmentation

On the WEPCO property, there are several habitat types scattered around the existing power plant facility. These areas are divided into large blocks that are bordered by roads, railroad tracks, clearings, and other disturbance. While the habitat blocks have been fragmented somewhat, they still have adequate acreage to provide habitat for both generalist and specialist wildlife species. However, continued fragmentation of these habitat blocks will affect their ability to support certain specialist wildlife species. Specialist wildlife species present on WEPCO's property include forest interior birds, some grassland songbirds, and amphibians.

Habitat fragmentation affects the size and shape of a habitat area, which affects the types of wildlife that can use the area successfully. Habitat "blocks," such as a woodland or prairie, contain an edge and an interior portion. Edges are the outer portions of a habitat block bordering with other habitat types. The interior portion is the inner portion of a specific habitat block. If habitat blocks have more edge habitat than interior habitat, they may suffer detrimental impacts on their area-sensitive wildlife. (Area sensitive species are those species whose occurrence or reproductive success is reduced in small habitat patches). This is a concern because there are no longer many large tracts of, for instance, consistent forest, prairie, or wetland habitat. The places for area-sensitive wildlife like forest interior birds or large predators to use are becoming smaller and fewer.

One of the major effects of the existing OCPP facilities is on habitat for forest interior birds. Edge-related impacts to these birds (ovenbirds, scarlet tanagers, for example, and others) include increased nest predation and nest parasitism. Forest interior birds that may be present on the OCPP property include: American redstart, veery, ovenbird, black and white warbler, and least flycatcher. Edge habitat areas support a high number of wildlife species, including an increased number of predators like crows, blue jays, cats, dogs, or raccoons. Forest interior birds have not developed behaviors to deal with many of these predators, behaviors such as nest camouflage, or nest location. Therefore, their nests are more susceptible to predators. Forest interior birds in edge-dominant habitat have lower nest success rates. The lower nest success could potentially push these birds out of edge-dominant habitats like smaller woodlots or long, narrow woodland blocks.

An important example of edge effects in woodlands is nest parasitism by brown-headed cowbirds. Brown-headed cowbirds lay their eggs in other bird species' nests, and the cowbird nestling is typically the only nestling to fledge. Bird species found in edge habitat have developed behaviors to deal with brown-headed cowbirds, by pushing cowbirds out of the nest or by building a new nest. Forest interior birds have not developed these behaviors and are more susceptible to cowbird parasitism.

Edge also impacts non-bird wildlife species, mainly as increased predator pressure. As the sizes of woodlands are reduced, predators such as cats, dogs, or crows, that are not associated with woodlands normally or that use woodland edges, are able to venture further into the smaller woodlands and prey on woodland specialist species.

On the OCPP property, the largest woodland habitat areas are about 20 to 30 acres. These areas still have the potential to provide some habitat for area-sensitive species like forest interior birds¹⁰⁸ and amphibians (e.g. salamanders, eastern gray tree frog, etc.). Several of the smaller woodland areas on the OCPP property are in close proximity to each other or near a larger block of woodland habitat. Because of the close proximity to other similar habitat, area-sensitive or specialist wildlife species can and will use these smaller areas.

Existing vegetation

Most areas near the communities of Oak Creek and Caledonia have been cleared for agricultural, industrial, or residential uses, and the native vegetation has been reduced to scattered old fields and stands of second-growth, mixed hardwoods. Activities and operations related to operating the existing OCPP facilities in addition to previously agricultural practices have disturbed much of the property. However, old fields, woodlands, grasslands, presently farmed cropland, wet meadows, and marsh or pond habitat are present.

Fieldwork to identify wetlands and vegetation communities present on the OCPP property has recently been completed.¹⁰⁹ Wetlands are discussed in Chapter 8 of this EIS. The discussion of existing vegetation that follows can be supported by referring to the figures showing the existing plant layout (Figure 6-2), existing topography (Figure Vol. 2-11), existing wetlands (Figure Vol. 2-13, 2-15, and 2-17) and a Natural Area, PECs, CSHs, and INRAs (Figures Vol. 2-14, 2-165, and 2-18).

North of Elm Road

Much of the northern portion of WEPCO's property, along the lake and north of Elm Road to Oakwood Road (about 175 acres), has been allowed to revert from cultivated to permanent vegetative cover. Old field vegetation exists here, in successional stages ranging from early old fields dominated by grasses and other herbaceous species to late old fields dominated by shrubs and saplings. In the earlier successional areas, a variety of grasses and forbs such as goldenrod (*Solidago* sp.), aster (*Aster* sp.), Queen Anne's lace (*Daucus carota*), other composites, sweet clover (*Melilotus* sp.), and other legumes are present. In the later successional old fields, woody vegetation has invaded, including hawthorn (*Crataegus* sp.), white ash (*Fraxinus americana*), dogwood (*Cornus* sp.), Chinese elm (*Ulmus pumila*), and box elder (*Acer negundo*). The inactive North Oak Creek Ash Landfill, also in this part of the property, is flat-topped and currently supports grasses and other herbaceous species. Its steeper slopes are planted in crown vetch (*Coronilla varia*). Toward Oakwood Road, near Elm Road, and east of the landfill are wooded areas with white ash, aspen (*Populus* spp.), and hawthorn. Much of that area has been allowed to revert from cultivated to permanent vegetative cover. Woody vegetation has invaded, and a variety of grasses and forbs are still present.

About half the area between Elm Road and Oakwood Drive is SEWRPC-designated PEC land (Figures Vol. 2-14, 2-16, and 2-18). This includes the area all along the lakeshore and bluff top extending westward north and south of the North Oak Creek Landfill. This land is mostly wooded old field, large wetland complexes associated with streams, and smaller wetlands surrounding the inactive landfill. In the northeast corner of

¹⁰⁸ Forest interior birds prefer larger blocks of woodland habitat, 100-250 acres, but will use smaller woodland blocks if they are close to larger woodland areas (over 100 acres in size); if the smaller woodland blocks are in close proximity to each other; or if there are larger blocks of habitat available.

¹⁰⁹ By the Southeastern Wisconsin Regional Planning Commission (SEWRPC) north of Elm Road and by Graef, Anhalt, Schloemer & Associates south of Elm Road.

the property, within the PEC are two CSH areas. One is an 11.5-acre good quality upland Southern mesic forest with some disturbances due to selective tree cutting and small footpaths. However, over 100 plant species, including the state-designated endangered, blue-stemmed goldenrod (discussed later in this chapter), were observed. The other CSH is a small (0.02-acre) arrow grass wetland on the bluff face with ground water seepage.

South of Elm Road and east of the railroad

About 400 acres lies south of Elm Road, extending between the lake and the railroad to Seven Mile Road on the south. This area includes the operating South OCPP and the retired portions of the older North OCPP. It also includes the government-owned shooting range and land north and south of the range. Except for some privately farmed property in the south, most of this parcel is occupied, as in the north, by old field vegetation in various stages of succession. The shooting range property (about 70 acres) is in mowed grass.

A second SEWRPC-designated PEC is located in the area south of the OCPP facilities, along the lakeshore and bluff top and extending inland, south of the shooting range to include the Ravine Woods Natural Area (Figures Vol. 2-14, 2-16, and 2-18). The Ravine Woods Natural Area is 22 acres of good quality Southern mesic hardwoods. It has experienced some impacts due to selective tree cutting, small foot paths, and agricultural activities at its margins but contains over 117 different plant species. This includes the state-endangered blue-stemmed goldenrod and state-threatened cream gentian (discussed later in this chapter). There are also several other wooded areas and wetland communities. Dominant vegetation in the wooded areas includes sugar maple (*Acer saccharum*), American beech (*Fagus grandifolia*), shagbark hickory (*Carya ovata*), basswood (*Tilia americana*), hawthorn, red and white oak (*Quercus* spp.), and white ash. As shown in Figures Vol. 2-13, 2-15, and 2-17, there are three other woodland areas designated as CSHs, north of the shooting range near the shoreline, the area enveloping the northern end of the curved rail track, and the overlapping western quarter of the shooting range. Located just south of Elm Road is another CSH, a small upland meadow.

The largest wooded parcel (approximately 17.5 acres) on the property is located south and inside of the OCPP rail track, west of the existing power plant units. This woodland is easily identifiable on numerous map figures in a variety of EIS chapters and in Volume 2. As shown in Figures Vol. 2-14, 2-16, and 2-18, it is a designated CSH and an INRA. Basswood and beech are co-dominant species and account for more than half of the trees in this woodland; at least ten beech trees have a diameter of greater than 30 inches. Approximately 90 plant species have been recorded in these woods, including the state-endangered blue-stemmed goldenrod (discussed later in this chapter). The herbaceous layer also includes numerous jack-in-the-pulpit (*Arisaema triphyllum*) and white avens (*Geum canadense*), and some lady fern (*Athyrium filix-femina*), blue cohosh (*Caulophyllum thalictroides*), mayapple (*Podophyllum peltatum*), and bedstraw (*Galium* sp.). These are all common species in southeastern Wisconsin woodlands.

West of the railroad

West of the C&NW Railroad tracks and south of Elm Road is additional WEPCO property extending westward towards STH 32. The area includes two landfills, three areas designated as INRAs, and one designated CSH within one of the INRAs. (See Figures Vol. 2-14, 2-16, and 2-18.) South of Elm Road is the closed South Oak Creek Ash Landfill. This landfill has been reclaimed and planted as grassland with perennial grass and herbaceous species. WEPCO-owned areas surrounding the landfill are old fields to the

west and agricultural lands rented out to the south. Spanning the north and south sides of Rifle Range Road and northwest of the active Caledonia ash Landfill is an 18-acre woodland designated as a CSH. About 55 plant species have been identified in the woods north of Rifle Range Road with more than 70 species identified in the southern portion. Sugar maple, white oak (*Quercus alba*), basswood, beech, and white ash are dominant in the northern woods, with basswood, sugar maple, and shagbark hickory dominant in the southern portion.

Wildlife

Wildlife use of the property

The OCPP property has several habitat types -- woodland, wetland, riparian land, lakeshore, grassland, and old field -- that support many different wildlife species. Many of these species use several of these habitat types for different stages of their life cycle, such as nests or dens, foraging, or cover. The following tables (Tables 10-1 through 10-6) are listings of wildlife species that are likely to be found in different habitat types on the property. Some species may be listed in more than one habitat type because they use different habitat types for different parts of their life cycle.¹¹⁰

In woodland

The woodlands provide den and nesting areas, cover, and feeding areas for wildlife like the mammals, birds, reptiles, and amphibians listed in Table 10-1. In the larger patches of woodlands, dead trees or snags provide dens for mammals like squirrels or raccoons and nesting areas for birds like woodpeckers or screech owls. Branches of trees and shrubs are used by birds like warblers or vireos as nesting sites and by squirrels as den sites. Birds like ovenbirds or black and white warblers can use the leaf litter for nest sites. Downed logs serve as cover and dens for salamanders, small mammals and snakes. Burrows dug in the woodland floor serve as den sites for mammals like opossums, foxes, skunks, or mice. Amphibians and snakes also may use abandoned burrows as den areas.

Table 10-1 Species likely to be found in OCPP woodlands

Type	Species
Mammals	White-tailed deer, red fox, gray fox, coyote, raccoon, opossum, gray squirrel, southern flying squirrel, cottontail rabbit, bat, chipmunk, shrew, skunk, and mice
Birds	Cooper's hawk, sharp-shinned hawk, great horned owl, screech owl, American robin, northern cardinal, common grackle, mourning dove, downy woodpecker, hairy woodpecker, American crow, blue jay, black-capped chickadee, house wren, blue-gray gnatcatcher, cedar waxwing, northern flicker, red-bellied woodpecker, eastern wood-pewee, red-eyed vireo, warbling vireo, scarlet tanager, white-breasted nuthatch, eastern towhee, American redstart, indigo bunting, brown headed cowbird, red breasted grosbeak, great crested flycatcher, veery, blue-winged warbler, golden-winged warbler, wood thrush, black and white warbler, ovenbird, northern oriole, and wood duck
Reptiles	Northern redbelly snake, common garter snake, and brown snake
Amphibians	American toad, eastern gray treefrog, spring peeper, and tiger salamander

¹¹⁰ This list is based on DNR professional opinion on habitat type, personal observations, and local survey data from county surveys.

Woodlands provide a variety of food sources. Trees such as oaks, ash, and birch and shrubs such as nannyberry, elderberry, and dogwood provide seed and berry sources for birds like blue jays and mammals like squirrels or deer. Dead trees and downed logs are homes to insects, which provide food for woodpeckers and for mammals like raccoons, squirrels, or skunks. Woodlands support a variety of insects that are food sources for birds like wood pewees or flycatchers, amphibians like salamanders or American toads, and reptiles like eastern garter snakes. Deer and rabbits browse on the wood vegetation itself. Predators like the sharp-shinned hawk, Cooper's hawk, great horned owl, or fox feed on small mammals, small birds, and other animals that use the woodland.

In old field

The old field area provides nesting locations or burrows, cover, and feeding areas for wildlife like the mammals, birds, and reptiles listed in Table 10-2. Scattered trees, shrubs, and grassy patches provide nesting locations for birds such as gray catbird, field sparrow, and song sparrow. Burrows dug in the old field floor serve as burrows or den sites for mammals such as woodchuck, mice, vole, or shrew. Amphibians and snakes may also use these den sites when abandoned.

Table 10-2 Species likely to be found in OCPP old field habitat

Type	Species
Mammals	White-tailed deer, red fox, coyote, raccoon, opossum, cottontail rabbit, skunk, weasel, meadow vole, shrew, and mice
Birds	Shrike, red-tailed hawk, European starling, song sparrow, goldfinch, chipping sparrow, field sparrow, mourning dove, eastern kingbird, gray catbird, eastern phoebe, black-capped chickadee, blue jay, brown thrasher, eastern blue bird, yellow warbler, blue-winged warbler, golden-winged warbler, brown headed cowbird, and house finch
Reptiles	Garter snake, eastern milk snake and fox snake

Old fields provide a variety of food sources. Trees like box elder or ash and shrubs such as sumac, dogwood, and buckthorn provide seed and berry sources used by birds and mammals. Predators like the red-tailed hawk, sharp-shinned hawk, fox, and coyote feed on the small birds, small mammals, and other small animals that use the area.

In grassland

The grassland area provides nesting and burrow locations, cover, and feeding areas for wildlife like the mammals, birds, reptiles, and amphibians listed in Table 10-3. The grass vegetation structure provides nesting locations for birds. Burrows provide den sites for mammals and reptiles.

Table 10-3 Species likely to be found in OCPP grassland

Type	Species
Mammals	White-tailed deer, red fox, coyote, raccoon, opossum, cottontail rabbit, weasel, skunk, woodchuck, meadow vole, shrew and mice
Birds	Kestrel, red-tailed hawk, northern harrier, house sparrow, goldfinch, song sparrow, field sparrow, chipping sparrow, savannah sparrow, eastern meadowlark, bobolink, barn swallow, tree swallow, eastern kingbird, mourning dove, killdeer, mallard duck, blue-winged teal, red-winged blackbird, Henslow's sparrow, and dickcissel
Reptiles	Fox snake, garter snake, eastern plains garter, and eastern milk snake
Amphibians	Tiger salamander and chorus frog

Grassland areas provide a variety of food sources. The grasses and flowers provide seeds for birds and mammals. The flowers attract insects that birds, mammals and amphibians feed on. Predators like the kestrel or red-tailed hawk also feed on animals like small mammals or insects that use this area.

In wetland

The wetland areas (See Figures Vol. 2-12, 2-14, and 2-16) provide nesting and den locations, cover, and feeding areas for wildlife like the mammals, birds, amphibians, and reptiles listed in Table 10-4. The sedges, shrubs or fringe vegetation in a marsh provide nesting locations for birds such as the song sparrow, marsh wren, or sora rail. Muskrats will create lodges made of cattails in deep marshes. Amphibians like frogs and salamanders will use the open waters in marshes for egg laying.

Table 10-4 Species likely to be found in OCPP wetlands (shrub-carr, sedge meadow, shallow marsh, deep marsh)

Type	Species
Mammals	Raccoon, red fox, weasel, muskrat, shrew, and vole
Birds	Greenback heron, great blue heron, yellow warbler, common yellow throat, song sparrow, red-winged blackbird, willow flycatcher, barn swallow, tree swallow, swamp sparrow, marsh wren, sora rail, yellowlegs, American woodcock, snipe, Canada goose, mallard duck, and blue-winged teal
Reptiles	Painted turtle, snapping turtle, fox snake, common garter snake
Amphibians	Chorus frog, American toad, spring peeper, wood frog, tiger salamander, green frog, and leopard frog

Wetland areas provide a variety of food sources. Wetland vegetation like bulrushes, cattails, or duckweed, and aquatic seeds and tubers, such as from arrowhead, provide food for birds and mammals. Insects found in wetlands also provide a food source for frogs, reptiles and birds. Other wildlife like frogs or muskrats serve as food for predatory wildlife like the great blue heron or mink.

In riparian habitat

Riparian areas are areas bordering streams. The riparian area provides nesting and den locations, cover, and feeding areas for wildlife like the mammals, birds, reptile, and amphibians listed in Table 10-5. The trees and shrubs provide nest sites for birds. Mammals like mink can make dens in the bank of a stream.

Table 10-5 Species likely to be found in OCPP riparian habitat

Type	Species
Mammals	Raccoon, opossum, mink, white-tailed deer, red fox, cottontail rabbit, weasel, skunk, shrew, vole, and mice
Birds	Kingfisher, greenback heron, great blue heron, yellow warbler, common yellow throat, song sparrow, red-winged blackbird, willow flycatcher, barn swallow, tree swallow, swamp sparrow, yellowlegs, mallard duck
Reptiles	Common garter snake
Amphibians	American toad, bullfrog, green frog, leopard frog

Riparian areas provide a variety of food sources. The trees, shrubs, and wetland vegetation provide food for birds and mammals. Insects that use the riparian places are sources of food to birds, amphibians, and reptiles. Kingfishers can feed on any fish in the stream, and great blue herons can feed on frogs.

In beach or bluff habitat

The Lake Michigan beach area provides nesting and den locations, cover, and feeding areas for wildlife like the mammals, birds, and reptiles listed in Table 10-6. The beach and bluff areas provide nest sites for birds and turtles.

Table 10-6 Species likely to be found in OCPP bluff or Lake Michigan beach habitat

Type	Species
Mammals	Raccoon, white-tailed deer, and coyote
Birds	Herring gull, spotted sandpiper, yellowlegs, mallard duck, Canada goose, black duck, American coot, barn swallow, and tree swallow
Reptiles	Snapping turtle and painted turtle

The beach and bluff areas provide food sources. The vegetation provides seeds. Insects that use the beach provide food for birds.

Bird habitat

Bird migration stopover habitat

The large blocks of habitat on the OCPP property also provide “stopover sites” for migrating birds like hawks, falcons, owls, shorebirds, waterfowl, gulls, terns, sparrows, warblers, thrushes, and songbirds. In particular, the CSH located along the beach area north of the current power plant has the potential for providing critical habitat, nesting, foraging, roosting, and/or migration habitat for three of Wisconsin’s endangered species: the Caspian tern, the common tern, and the piping plover. All three of these birds have been observed in Milwaukee County and have likely stopped at the OCCP property; however, nesting at this property has not yet been documented.

Other possible migrants include: red-throated loon, common loon, pied-billed grebe, horned grebe, eared grebe, double-crested cormorant, American bittern, least bittern, great egret, snowy egret, turkey vulture, snow goose, mute swan, tundra swan, gadwall, American widgeon, blue-winged teal, northern shoveler, northern pintail, green-winged teal, canvasback, redhead, ring-necked duck, greater scaup, lesser scaup, harlequin duck, surf scoter, oldsquaw, bufflehead, common goldeneye, hooded merganser, common merganser, red-breasted merganser, ruddy duck, osprey, bald eagle, red-shouldered hawk, rough-legged hawk, merlin, peregrine, yellow rail, king rail, Virginia rail, black-bellied plover, American golden plover, semi-palmated plover, solitary sandpiper, ruddy turnstone, sanderling, pectoral sandpiper, dunlin, bonaparte’s gull, ring-billed gull, herring gull, Thayer’s gull, glaucous gull, forester’s tern, black-billed cuckoo, nighthawk, whip-poor-will, ruby-throated hummingbird, red-headed woodpecker, yellow-bellied sapsucker, golden-crowned kinglet, ruby-crowned kinglet, Tennessee warbler, orange-crowned warbler, Nashville warbler, northern parula, magnolia warbler, black-throated blue warbler, yellow-rumped warbler, black-throated green warbler, blackburnian warbler, yellow-throated warbler, pine warbler, prairie warbler, palm warbler, bay-breasted warbler, cerulean warbler, prothonotary warbler, mourning warbler, hooded warbler, Canada warbler, yellow-breasted chat, scarlet tanager, vesper sparrow, grasshopper sparrow, Henslow’s sparrow, field sparrow, American tree sparrow, fox sparrow, Lincoln’s sparrow, white-throated sparrow, white-crowned sparrow, dark-eyed junco, and snow bunting.

Migration for birds involves long journeys twice a year between their northern breeding grounds and their southern wintering grounds. Spring migration occurs in Wisconsin from March to May and involves birds traveling from the wintering grounds to the breeding grounds. The fall migration occurs in Wisconsin from mid-August to mid-November and involves birds traveling from the breeding grounds to the wintering grounds. During migration, over 300 species and millions of individual birds travel thousands of miles, using the Lake Michigan shoreline as a guide to reach their destination.

In preparation for the long migratory journey, birds spend time building up fat reserves for the flight. During the migration, birds will make several stops to replenish fat reserves and rest. Stops will be made in blocks of habitat where birds will be looking for food (for example, berries, insects, birds, small mammals, etc.), shelter or roosting areas, and protection from hazards such as predators or extreme weather conditions. The places where the birds stop are called stopover sites. These habitat blocks can be natural communities such as woodlands, grasslands, beaches, backyards, or parks. Natural communities are more valuable as stopover sites than backyards and parks because of the more diverse habitat structure and food sources.

Stopover sites need good cover to provide protection for tired birds. Each area of cover should have diverse layers, such as shrubs and trees or grasses and shrubs. Suitable cover will protect the birds from extreme weather conditions or predators. When migrating birds are forced to use marginal stopover sites without suitable cover, these birds are exposed to increased dangers, affecting their survival and fitness.

Sites also need ample, diverse food supplies for birds to replenish fat reserves. Sites with diverse food sources (insects, fruits, and seeds, for example) give the birds a variety of options. If the sites lack ample or diverse food supplies, the birds may be forced to continue the journey not fully charged, which potentially lowers their survival rate or results in them reaching the breeding grounds in poor condition. If they reach the breeding grounds in poor condition, their nesting attempts and reproduction success are adversely affected.

The lack of food resources could also force the birds to stay at the stopover site longer in attempts to fully replenish their fat reserves. This could result in the birds arriving too late on the breeding grounds. If they arrive too late, they might:

- Not find breeding territory.
- Be forced to use marginal breeding habitat, lowering nest success.
- Eliminate nesting attempts altogether.

The OCPP stopover sites include not only the beach area but also the woodland, wetland, old field, and grassland. The OCPP stopover habitat in general is part of the larger corridor of habitat that runs along the Lake Michigan shoreline, mainly right along the lakeshore. SEWRPC has identified quality habitat (isolated natural areas) and primary and secondary corridors that can potentially serve as stopover locations for migrating birds. In 1985, small, scattered, isolated blocks of habitat and corridors along waterways were the only locations of quality habitat remaining near the lakeshore in Kenosha, Racine and Milwaukee Counties. Eighteen years later, by 2003, there has likely been a further reduction in isolated habitats and corridors as a result of development pressures.

Wintering habitat on Lake Michigan

During the winter months, nearby Lake Michigan serves as a wintering area for migrating waterfowl and gulls. Several species of duck rest offshore in large rafts or small groups, resting and feeding in open freshwater. The birds feed mainly on crustaceans, aquatic insects, vegetation, and fish. Species found on Lake Michigan during the winter months include bufflehead, oldsquaw, greater scaup, lesser scaup, common merganser, red-breasted merganser, goldeneye, and ruddy duck.

Grassland habitat

The proposed North Site for the ERGS has two major grassland areas, both fly ash landfills. These areas provide suitable habitat for grassland songbirds, a bird group in decline nationwide. The decline of grassland songbirds has been attributed to loss and fragmentation of habitat, changes in farming practices, urban development, and increased predation. In Wisconsin, less than 0.1 percent of the original prairies remain.¹¹¹ Suitable habitat includes open areas dominated by grasses with flowers and minimal woody vegetation.

Of the 105 bird species found in Wisconsin to use grasslands as one part of their breeding cycle¹¹² (for courtship, nesting, foraging, rearing young, and roosting or resting), seventeen of these species use grasslands for most or all parts of their breeding cycles. Of these seventeen species, five of them have been found on one or both of the grassland areas at the proposed North Site. During a morning survey conducted on both the North and South Oak Creek landfills on June 20, 2002 by WEPCO and DNR, four of these five bird species were heard: bobolink, savannah sparrow, eastern meadowlark, and dickcissel. The fifth species, the Henslow's sparrow, was not heard during the survey but has been heard on the grassland site on the South Oak Creek Ash Landfill south of Elm Road in past years. In a follow-up survey conducted on June 27, 2003 on the two closed Oak Creek Landfills, the species heard and seen were similar to the past year, except for the dickcissel. Species included bobolink, eastern meadowlark, gold finch, red-winged blackbird, savannah sparrow, barn swallow, tree swallow, and willow flycatcher. On one area of the South Oak Creek Landfill, a group of twenty-one male bobolinks were counted. On the North Landfill, the Henslow's sparrow is a state threatened species in Wisconsin and will be addressed in more depth in the following Endangered and Threatened Species section of this chapter. The Henslow's sparrow, bobolink, and dickcissel are species of concern for Partners in Flight, the U.S. Fish and Wildlife Service Region 3, and the Wisconsin DNR.

Insects

The varied habitat types on WEPCO's property support a large insect population. Insect life on the property plays a role in many aspects of the ecology of the site - serving as a food source for wildlife (e.g. birds, amphibians, reptiles, other insects, and small mammals) and as pollinators. The insect types found on the property range from water boatmen, backswimmers, dragonflies, and water striders in wetlands and ponds to grasshoppers, crickets, orange sulphur butterflies, cabbage white butterflies, monarch butterflies, eastern tiger swallowtail butterflies, leafhoppers, mosquitoes, yellow jackets, and ants in grasslands to wolf spiders, flies, luna moths, little wood-satyr, and northern walkingsticks in the woods.

¹¹¹ DNR Technical Bulletin No. 191, 2000

¹¹² Sample, David W. and Mossman, Michael J., Managing Habitat For Grassland Birds- A Guide For Wisconsin, DNR Bur. Of Integrated Science Services, 1997, pages 8-10, 22.

Similar to other wildlife species on the property, the loss of habitat would force insects to relocate or be destroyed if they have limited mobility (e.g. water striders in shallow marsh). Insects that do relocate to similar habitat on or off WEPCO's property could face dangers that affect their health or survival.

Threatened/endangered species

No species listed as threatened or endangered by the U.S. Fish and Wildlife Service are known to occur on the property or in the project area.

A number of species of plants, birds, crustaceans, insects, reptiles, and fish are listed with the DNR as endangered, threatened, or of special concern in Milwaukee and Racine Counties. Those present or suspected to be present on the OCPP property are discussed below.

State endangered species

Blue-stemmed goldenrod

Each proposed ERGS siting arrangement on WEPCO's property contains the same three forested mixed hardwood sites that provide habitat for the state-endangered blue-stemmed goldenrod, (*Solidago caesia*). These are wooded areas ranging from 7.5 to 17.5 acres in size, with second-growth hardwood forest dominated by sugar maple, basswood, white ash, American beech, and shagbark hickory. Blue-stemmed goldenrod populations of 150 to 600 plants are present in each area.

Blue-stemmed goldenrod is classified as critically endangered in Wisconsin because of the rarity of its habitat, scattered remnants of second-growth mesic mixed hardwood stands in southeastern Wisconsin. This habitat type has been greatly reduced in extent by clearing of land for agricultural and other uses. Blue-stemmed goldenrod is at the periphery of its range in southeastern Wisconsin, but exists in appropriate habitat in much of the central and southern U.S., and is not listed as endangered or threatened on a national level.

Peregrine falcon

The state endangered Peregrine falcon (*Falco peregrinus*) has nested in the recent years in an artificial nest box placed on the stack for OCPP Units 7 and 8. WEPCO has had a long-standing commitment to assist in the recovery of the peregrine falcon. It has indicated that the presence of the falcon at the existing power plant is valued. WEPCO has indicated that it expects to accommodate the falcons' residency throughout the ERGS construction period and thereafter.

State threatened species

Yellow gentian

The Yellow gentian (*Gentiana alba*) is a Wisconsin threatened species. It was found in the woodland/prairie area just south of Elm Road. Its habitat includes the clay soils in wooded ravines; thin soil on dry, open woodlands and edges; ridges and bluffs; wet sandy prairies; railroad rights-of-way; and roadside ditches.

Henslow's sparrow and other grassland birds

In June 2001, a Henslow's sparrow (*Ammodramus henslowii*) was found on the inactive South Oak Creek Landfill grassland. This state threatened species is a candidate for federal listing. Henslow's sparrows breed in a variety of grassland habitats with tall, dense grass and herbaceous vegetation. The state threatened

dickcissel (*Spiza americana*) is also likely to be found in the OCPP property grasslands, as well as the eastern meadowlark (*Sturnella magna*), field sparrow (*Spizella pusilla*), bobolink (*Dolichonyx oryzivorus*), and other species listed in the above section on Wildlife. The meadowlark, field sparrow, and bobolink are listed with the DNR as species not actively tracked but for which data is being collected.

While nesting has been known to occur in grasslands that are mowed every year, studies generally indicate that less frequent mowing results in more favorable habitat for this species. Periodic mowing, however, is a viable option at this time for maintaining suitable grasslands, provided that mowing is done after the breeding season is concluded and the sparrows have dispersed.

Reptiles or amphibians

Species that could be found in wetlands, woodlands, and old field habitat on the property include three state-threatened reptile and amphibian species. The Blanding's turtle (*Emydoidea blandingii*) prefers shallow and deep marshes, the shallow bays of lakes and reservoirs, shallow and slow moving streams and rivers, and backwater sloughs with soft bottoms and aquatic vegetation. There are marshes and small streams on the OCPP property, as discussed in Chapter 8. This turtle is also a candidate for federal listing. The Butler's garter snake (*Thamnophis butleri*) is also a candidate for federal listing. It prefers wet-mesic prairies, marshes, roadside grassy areas, and vacant urban lots, so there are several habitat opportunities on the OCPP property. The bullfrog (*Rana catesbeiana*) is likely to be found on the property in riparian situations.

The Blanding's turtle and Butler's garter snake have not been seen on the OCPP property. The bullfrog is a likely resident. If any of these species is found to be present on the project site, WEPCO has stated its intention to take appropriate steps to discourage the animals from entering the construction areas, and would hire a qualified professional to consult and assist in this effort under DNR oversight.

State special concern species

Special concern species are those species about which some problem of abundance or distribution is suspected but not yet proved. The main purpose of this advisory category is to focus attention on certain species before they become threatened or endangered.

Vegetation

The OCPP property is habitat for three species of Special Concern for the state of Wisconsin. Seaside spurge (*Euphorbia polygonifolia*), American searocket (*Cakile edentula*), and Slender Bog Arrow-grass (*Triglochin palustris*) were all found along the beach and bluff area. The state ranks these plants as rare or imperiled in Wisconsin with less than 100 occurrences. The seaside spurge occurs in Wisconsin only along Lake Michigan and is particularly sensitive to the destruction of beach and dune habitat.

Great blue heron

The state special concern species great blue heron (*Ardea herodias*) is a species likely to be found in wetland or riparian habitat on the OCPP property. Since the heron is highly mobile and since most of the wetlands would remain on the property, the frogs that the herons feed on would probably still be present though possibly reduced in abundance. Heron appearances on the property might also decrease.

Species not actively tracked but under state observation

Most of the species and natural communities on the endangered, threatened, and special concern lists are actively tracked.

The DNR also has a list of species that are not officially endangered, threatened, or of special concern, but for which the DNR is collecting data. Several species on this list are likely to be found on the OCPP property in different habitat areas. As discussed above, these species include the bobolink, field sparrow, and eastern meadowlark on grasslands. They also include the Cooper's hawk (*Accipiter cooperii*), veery (*Catharus fuscescens*), golden-winged warbler (*Vermivora ruficapilla*), and wood thrush (*Hylocichla mustelina*), all likely to be found in OCPP woodlands. The blue-winged teal (*Anas discors*), likely to be found in OCPP wetlands and grasslands, is also on this list.

Archeology/historic properties

Wisconsin law – protection of listed historic properties

Under Wis. Stat. § 44.40, the PSC as a state agency must determine if project construction or operation could adversely affect “historic properties” listed with the Wisconsin Historical Society (WHS). Listed historic properties could be buildings, burials, archeological sites, cultural areas, or sacred areas. Historic properties, including archeological sites, are considered by the WHS to be a natural resource. If a listed historic property appears potentially affected, the PSC must consult with the WHS, who determines whether there would be an adverse effect on it from the project. If the WHS determines that the proposed project would have an adverse effect on a historic property, the PSC and WHS must negotiate methods to reduce or avoid the impact. The PSC is then authorized to include the results of that consultation and negotiation in its order to the applicant, as a condition on the order if necessary.

The PSC and WEPCO have examined the WHS listings of historic properties in compliance with Wis. Stat. § 44.40 and found several archeological sites listed on the OCPP/ERGS property. Of eight located sites, however, five do not appear to be near areas of expected disturbance from ERGS construction for the North Site or the South sites. They appear to be one church cemetery and four campsite/home sites of different ages, including a historic Euro-American cabin, in places near the wetland INRA west of the operating Caledonia ash landfill. Of the three sites that appear to be in areas potentially affected by ERGS North Site, South Site, or South Site Exp construction, two are campsite/village sites located on the west side of the main railroad line northeast of the Caledonia landfill, and one is a projectile point discovery site located just inside the western portion of the WEPCO rail loop, in the CSH located there.

There is also one WHS-listed home on the south side of the OCPP property, north of Seven Mile Road and east of STH 32, on Douglas Avenue.

Federal law – surveys to locate and evaluate historic properties

Under Section 106 of the National Historic Preservation Act, the federal agencies with an interest in the project must consult with the State Historic Preservation Officer (SHPO) and appropriate Tribal Historic Preservation Officers (THPO) to determine if there are historic properties eligible for the National Register of Historic Places that might be adversely affected by the project. Federal interest would include permitting and other activities delegated to the states. The potential for public participation in this separate review

process is described in Chapter 1. Often, the CPCN applicant begins (and often completes) the work on the consulting, survey, and evaluation requirements during the CPCN process so that the Section 106 requirements are met and the appropriate alternatives are considered during the siting process rather than at a later time.

In this case, there appear to be direct and indirect EPA, FAA, and Army Corps interests related to the ERGS project. WEPCO has been asked to consult with the SHPO (the WHS fulfills this role) and THPOs and to follow their direction under Section 106. So far, the WHS/SHPO has determined to handle the project under state law. However, since the PSC issued the draft EIS on the project, the Army Corps has shown substantial interest related to the ERGS project as a whole. The PSC has suggested to the WHS and to WEPCO that a Section 106 review process may be more appropriate.

In April 1986, the Great Lakes Archaeological Research Center, Inc. (GLARC) had conducted an archaeological survey to ensure compliance with Section 106 for proposed construction related to the North Oak Creek Power Plant (Units 1 to 4). The area surveyed was for a six-acre parking lot, a ten-acre construction laydown area, and a construction workforce stairway. Those survey results concluded that there were no archaeological resources eligible for inclusion in the National Register of Historic Places and no further investigation was warranted. WEPCO had also received concurrence on the survey findings from the State Historical Society of Wisconsin (as the WHS was previously named).

Potential Impacts on WEPCO's Property

Topography

The topography of the present property would be greatly altered to accommodate the proposed ERGS. Large amounts of soil excavation, transport, and deposition would occur, regardless of the site option chosen. Soil from the land excavations would be used to create new berms or would be placed in soil repository piles at various points around the site. See Figures Vol. 2-12 through Vol. 2-17.

A summary of the excavated and deposited soil materials is shown in Tables 11-12 and 11-13 in the next chapter. For locations of the proposed ERGS units and proposed repositories of excavated soil, refer to Figures Vol. 2-13 through Vol. 2-18. This section of Chapter 10 on general potential impacts is followed by similar sections looking at each of the three sites individually.

One of the largest movements of soils is related to the construction of the two SCPC units at the lakeshore. Due to the topographical relief between the bluff along the Lake Michigan shoreline and the shoreline itself, major excavation work is proposed. The SCPC units would be dependent on once-through cooling, using water from the lake. It would be difficult and expensive to move the water up the bluff for this purpose, so the applicants have proposed to excavate an area by the lakeshore to accommodate the SCPC units. For the IGCC plant, the combined-cycle facility and air separation unit would need to be close to lake level to allow for open-cycle cooling. Other buildings could be built at higher elevations. Depending on the site selected, one SCPC unit would require excavation of 4.6 to 6.2 million cubic yards of soil. Two would require excavation of 5.8 to 7.3 million cubic yards. Adding the IGCC would require excavation of 7.3 to 10 million cubic yards.

All of the excavated soil and lake bottom dredging material would be relocated within the OCPP property in a series of berms around the perimeter of the property. There would be areas that would be screening berms and other areas that would be a combination of screening berms and soil stockpiles. As discussed in Chapter 11, the purpose of the screening berms would be to lessen the visibility of the power plant facilities and operations from off-site locations. Creation of the berms and other stockpile areas would also facilitate construction of the project as soil repositories.

The dredged material from the lake bottom for the harbor, discussed in Chapter 8, would probably be placed in the area near the closed North Oak Creek Landfill on the north end of the site.

The majority of the water intake tunnel spoils, also discussed in Chapter 8, would be utilized to create the new dock area north of the existing dock in the lake.

Geology

The area's rock geology would likely not be altered by construction of the new ERGS facilities on WEPCO's property. Excavations would occur only into the quaternary glacial deposits. These glacial deposits would most likely be relocated to new places on the property, as described in Chapter 11.

(The tunnel work to create the new water intake structure would burrow through the sedimentary rock under the bed of Lake Michigan and deposit the broken rock as an addition to what is now the on-lake coal dock.)

Soils exposed during construction would be susceptible to erosion and runoff into the existing surface water drainage system. Construction site runoff and erosion control requirements of Wis. Admin. Code ch. NR 216 would need to be attained. To minimize soil erosion, a variety of BMPs for erosion and sediment control would be used. These practices would include a sequencing of construction to expedite the project and minimize the length and duration of soil disturbance and exposure. Temporary erosion and sediment controls would include slope breakers, sediment barriers, and mulch. All erosion and sediment controls would be monitored and maintained throughout the construction process. After construction, all areas not in pavement or buildings would be seeded with permanent varieties of grass. The grass crop would be monitored for one year and additional restoration activities would take place if necessary. Techniques described in the DNR's *Wisconsin Construction Site Best Management Practice Handbook* would be used. Excess soil accumulated during construction of foundations would be either used on site or hauled off the site.

Since the soils are relatively fine-textured and tend to hold water in their natural state, they may tend to puddle after being relocated on site and could eventually create new wetlands if drainage is a problem and the appropriate plants seed into them. This wetland development appears to have occurred in the past at smaller scales from earlier soil transport and deposition.

Fugitive dust might be generated from exposed soil during construction. To avoid this, the applicants would employ water wagons regularly to spray access roads and construction areas to reduce dust. Fugitive dust as it could affect neighboring landowners and residents is discussed in more detail in Chapter 11.

Designated biological areas

As discussed in the previous sections, SEWRPC has identified a north and south PEC, nine CSHs, six INRAs, and the Ravine Woods Natural Area on the property. The PEC lands within the property total approximately 180 acres. Divided by existing power plant structures, the two PECs are part of a larger corridor that continues north and south along Lake Michigan. All three site options would require eliminating between 42 and 48 percent of the PEC lands.

Table 10-9 Estimated PEC impacts of the three siting options

Environmental Area (and approximate location)	Area (acres)	North Site Impact (acres)	South Site Impact (acres)	South Site-Exp Impact (acres)
PEC-(north)	114.2	69.6	65.5	65.5
PEC-(south)	65.8	9.6	9.6	21.7
Total	180.0	79.2	75.1	87.2

An examination of the proposed power plant layouts in Figures Vol. 2-1 through 2-3 and the proposed excavations in Figures Vol. 2-13, 2-15, and 2-17 show where large areas of natural areas would probably be removed, disturbed, or smothered during construction. None of the proposed layouts would impact the Ravine Woods Natural Area. However all three ERGS siting options proposed in the CPCN application would significantly impact some of the PECs, CSHs, and INRAs of the OCPP. Protected species are known to exist or are likely to exist in these designated biological areas.

Habitat fragmentation

The OCPP property provides several large blocks of varied habitat. All three ERGS siting options would fragment and eliminate habitat on the property. This fragmentation would likely impact area-sensitive species such as forest interior birds and amphibians, eliminating them over time or forcing them off the property because of edge effects. Area-sensitive species would have few locations to move to because the surrounding natural landscape is highly fragmented by development and agriculture. Generalist wildlife species like raccoon, deer, or opossum, gray squirrel, robin, starling, sparrow, and house finch would still use the area, but even the habitat for these species would be reduced by the project. The loss of the relatively large blocks of habitat would be locally significant.

The loss of the PEC in this area would reduce the travel corridor, forcing wildlife to travel longer distances to reach other similar habitat areas. It could also force wildlife to travel in marginal or unsuitable habitat, such as roads or mowed grass, increasing exposure to factors such as predators, weather, cars, or people's pets, that could lower survival rates.

Vegetation and wildlife

Impacts to vegetation would result regardless of the site selected by the Commission for construction of the plant. In addition, impacts would result from construction of a commercially-owned wallboard plant, which would likely be sited at the opposite end of the property from the generation units. All three sites would

also result in excavation and deposition of bluff soils, but there are some differences in amounts and locations for the deposition that affect which vegetation communities are impacted.

All three site options would lead to the removal of the old field habitat that would result in the loss of habitat for birds like blue jays or song sparrows in addition to species of mammals, amphibians and reptiles. Many of the species that use this old field are generalists and can use a variety of habitat types. Generalist wildlife species should be able to find other sites to use, mainly off of the OCPP property. However, where old field habitat is discussed below, it often relates to the PECs.

The woodland habitat on the OCPP property would be the most affected by the proposed ERGS. Of the three siting options, the South Site appears to have the most significant impact, but all three options would have similar levels of impact. Because large woodland areas are lacking in the surrounding landscape, the loss of medium-sized woodlands would have a large impact on forest interior bird habitat locally.

Selection of any of the three site options would require filling about 2.9 acres of woodland west of the railroad, due to soil stockpiling.

Pollutants

As discussed in Chapter 7, the ERGS power plant stacks would emit pollutants such as NO_x, SO₂, mercury, and particulates during operation. These pollutants have been associated with several environmental impacts that can affect wildlife. Some of these impacts include acid rain, vegetation defoliation, and mercury deposition. SO₂ and NO₂ have been tied to acid rain.

Acid rain increases the acidity of soil and/or waterways, lowering pH levels (that is, increasing their acidity). The lower pH levels in waterways result in fish and aquatic insect deaths, reducing the food for wildlife species that feed on those fish (such as herons or mink) or insects (such as waterfowl). Reducing food sources impacts the health of the animals and their reproductive capabilities. Acid rain can also affect the regeneration and quality of vegetation on the landscape. Vegetation provides many things to wildlife: cover from predators and weather, breeding or nesting areas, and food sources. A decrease in the regeneration of a certain plant species, such as an oak, could result in a decline of a food source for a certain animal, again potentially impacting the animal's health or reproductive capabilities.

Emission stacks can also deposit mercury particles in waterways and surface waters that are absorbed by fish and fish-eating species. The buildup of mercury toxins can impact the animals' health and reproduction capabilities and, in rare cases, can cause death.

Exhaust stacks

Tall man-made structures pose a potential hazard for local and migrating birds. Structures 200 feet or taller have the potential to cause deaths through blind collisions or confusion created by the structure lights in cloudy or foggy weather. Most documented collision cases have involved communication towers, but there have been cases of collisions with stacks as well.

FAA regulations¹¹³ require that the structures over 200 feet tall have lights to signal passing planes of the structures' presence. Structures between 200 and 350 feet tall require one level of medium white intensity strobes with no marking or one level of 300-millimeter red beacons at the top plus red obstruction lights at mid-level. Structures between 350 and 700 feet tall require four levels of red obstruction lights or two levels of medium white intensity strobes.

During migration, birds fly day and night at varying elevations depending on weather conditions. Smaller bird species travel at night, making them more susceptible to the danger of structures. On clear nights, these birds will migrate at elevations of 2,000 to 3,000 feet above sea level but will also travel lower. During overcast skies, the birds are forced to travel at lower elevations, between 500 -1500 feet, bringing them in potential contact with the tall structures.

The structures cause mortality in birds in two ways: through blind collisions and by an aurora of light. In the case of a blind collision, a bird simply flies into the structure. In these cases, the structure is obstructed by cloudy or foggy weather conditions. This can occur during the day or night. In the case of an aurora of light, the lights on a structure (this has mainly been observed on communication towers), in cloudy or foggy weather conditions, refract off of water particles in the air and create an illuminated area around the structure. In these conditions, migrating birds will lose their navigational cues (stars or landmarks, for example) and will actively try to relocate them. When the birds pass a lighted area, the increased visibility draws them in and holds them close to the structure. Mortality then occurs when birds run into the structure or collide with other birds crowding into the lighted space.

It is estimated that millions of birds, of over 300 different species, use the Lake Michigan shoreline during migration. It is also estimated that around 100 million birds in North America are killed each year in collisions of all kinds (that is, with cell phone towers, exhaust stacks, cars, or windows, for example). A catastrophic collision incident occurred in January 1998, when an estimated 10,000 Lapland longspurs died on a foggy, snowy night in western Kansas after colliding with a 420-foot tall television broadcast tower. In Eau Claire, Wisconsin, collisions were documented at a 1000-foot television broadcast tower from 1957 to 1995.¹¹⁴ During that period, 121,560 birds, of 123 different species, died at the tower.

The additional tall structures would have the potential to cause bird collisions. The OCPP currently has two stacks, only one is over 200 feet tall. The proposed expansion would add two stacks over 650 feet tall, two buildings 270 feet tall, and a 180-foot coal silo on top of a 60-foot structure (totaling 240 feet in height). The number of structures over 200 feet in height would increase from one to six. Two of these towers would be three times as high as the current stack. The number of collisions cannot be predicted and would depend largely upon weather conditions, time of year, and bird migrating patterns.

The use of a strobe white light, with a long gap between flashes, could help to reduce the collisions.

Migrating bird stopover habitat

Several of the vegetation communities on the OCPP property provide stopover habitat for migrating birds. The ERGS would impact all habitat types, especially woodland and wetlands, affecting the amount and quality of stopover sites. All three site options would result in significant impacts from elimination and

¹¹³ "Stack Design" -- www.warrenenvironment.com/html/stack_design.html, February 17, 2003

¹¹⁴ Malakoff, David, "Faulty Towers," Audubon vol. 3 no. 5, September/October 2001, pages 78-83.

reduction of habitat. The South Site appears to result in the greatest impact. Current local urban development patterns threaten stopover sites both inland of and along the Lake Michigan shoreline. The fact that Lake Michigan is an important traveling corridor for migrating birds increases the value of the stopover site habitat on the OCPP/ERGS property. The loss of this habitat would be a significant loss.

Regardless of the power plant site selected, the ERGS would result in the elimination of over 50 percent of the migration stopover habitat, wetland, woodland and grassland. Reducing the amount of stopover habitat would in turn adversely affect migrating birds by:

- Forcing them to continue their migration flight to find other, more suitable stopover sites.
- Forcing them to use the suitable but already crowded stopover sites.
- Forcing them to use marginal stopover sites.

Additional stopover sites do exist along the Lake Michigan shoreline in Milwaukee, Racine, and Kenosha Counties. These include the Schlitz Audubon area, Grant Park, Wind Point, the Racine Zoo, Carthage College, Chiwaukee Prairie, and existing undeveloped shoreline. However, development pressure near and on the Lake Michigan shoreline is still continuing to reduce the areas of suitable stopover habitat.

Archeology/historic properties

A survey was conducted for WEPCO by AVD Archeological Services, Inc. to comply with the PSC's requirements under Wis. Stat. § 44.40. Two of the three archeological sites identified in the process and described earlier in this chapter were surveyed and evaluated for eligibility in the 1985 study and found to be not significant in that respect. The third site was found to be based on an amateur artifact collector's finding and had not been field checked by a qualified archeologist. In the AVD study, none of the three sites were found. They were presumed destroyed by earlier disturbance activities on the property. The archeologist recommended no further archeological work related to those sites.

With the WHS's acceptance of the AVD report, it appears that potential impacts on known historic or archeological sites on WEPCO's property would not be significant regardless of the site selected by the Commission if it approves the project.

However, there is still the potential for impact on archeological sites that have yet to be discovered. If the ERGS project is considered under Section 106 of the NHPA, the SHPO or THPOs could require additional surveys and evaluations as well as consultations with interested parties, including Native American Tribes. If the findings of the surveys and consultations resulted in discoveries of potentially affected archeological or cultural resources, the Section 106 process would require agreements to protect the newly discovered resources. If there were significant modifications to the ERGS project (e.g. facility layout changes), the Commission would need to be notified. Otherwise, the compliance with Section 106 would rest with the Army Corps and, of course, WEPCO.

The information related to the CUP Option (a new site layout) has added some § 44.40 responsibilities because of the potential for impact to additional listed sites on WEPCO's property. The CUP Option is discussed in Chapter 12.

Potential Impacts - Site by Site

North Site

Topography and soils

SCPC units

Most topography-altering construction activities would occur where the new SCPC generating units would be built, on land north of the currently operating OCCP units. This can be seen in Figure Vol. 2-13, which shows the topographical changes expected from the plant's construction at the North Site. The other area that would have construction activity would be where the new coal storage and handling areas would be located, west of the proposed SCPC units. For the proposed IGCC facility, WEPCO would use the former North Oak Creek Power Plant site and the surrounding land previously used for power production and related activities, plus some land inside the eastern part of the WEPCO rail loop.

As Figures Vol. 2-12 and 2-13 also show, important changes in local topography would occur in areas where the soil from the excavation would be deposited. Quantities of the various cuts and fills for the North Site have been estimated (See Table 11-10). The excavation needed to build the two proposed SCPC units at the lakeshore would total about 7.3 million cubic yards. The newly excavated area would be about one million square feet (approximately 23 acres) at the base, sloping upward on three sides about 120 feet in elevation over a distance of about 300 feet to give an overall excavated area of about 1.92 million square feet (about 44 acres). The change in elevations at the North Site and the six locations where excavated soil would be placed can be seen in Figures Vol. 2-13 and 2-14.

The excavated soil would be deposited onto several places on the OCCP property, as described below and quantified in Table 11-10 in the Fugitive Dust section of the next chapter.

1. Screening berms south of Elm Road and north of the South Oak Creek landfill. The existing vegetation in this area is primarily old field and wetland.
2. South Oak Creek landfill. The entire landfill is currently grassland. After the soil is deposited, it would be used as a lay-down area for ERGS plant construction. Following its use as a lay-down area, the area would be seeded to establish new grassland.
3. South of the primary transmission line corridor, north of the proposed entrance road on the west side of the OCCP property, and just east of STH 32. This site is primarily active cropland and also includes approximately six acres of woodland.
4. North Oak Creek landfill with screening berms to the north and west. The landfill portion of this site is grassland. Vegetative cover types around the landfill include several stages of old field and wetlands.
5. East of the primary C&NW railroad corridor and west of the switchyard. This area is mostly industrial but does contain some old field vegetation and wetlands.
6. East of STH 32 and west of the primary railroad corridor. The current land use of this approximately 42-acre parcel is active cropland. Using this area would eventually convert the area from agriculture to permanent grassland.

IGCC unit

Although the IGCC would not require the same amount of excavation as the SCPC units, it would require excavation of approximately 2.7 million additional cubic yards, mainly behind what is now the North Oak Creek plant building. The ERGS plant at the North Site with the IGCC included would utilize all six of the soil deposition sites listed above. If some soil were trucked off site, WEPCO would not pile soil at the stockpile area in the southwest near STH 32 and the railroad north of Seven Mile Road and would reduce the amount of soil deposited in the berm to the north along STH 32 and south of the transmission corridor.

Regardless of the site utilized, WEPCO proposes to install toe protection at the base of the bluff and to allow the bluff to take its natural course of stabilization.

Figures Vol. 2-13 and 2-14 also show the potential wallboard plant location just north of the shooting range property. The wallboard plant might require additional stabilization of the bluff south of the ERGS North Site. For the purposes of the proposed project, WEPCO has made clear its intent to provide preliminary information on the surface environment and air quality impact of a hypothetical wallboard facility, but to defer addressing bluff stabilization for such a facility until a construction application would be filed at a later time.

Designated biological areas

The SCPC and IGCC building sites would potentially eliminate a large portion of the PEC along the lakeshore including bluff/beach, grasslands, old fields, wetlands, and woodland areas. The buildings' excavations would account for the majority of PEC impacts (79.2 acres). The new coal piles and the construction parking would account for most of remainder. Loss of the PEC would further fragment the remainder of the existing PEC that included both the property lands and those beyond the property boundaries.

The construction of the wallboard plant would result in impacts to the majority of one INRA/CSH and a smaller CSH located north of the rifle range and along the terminus of the rail road loop. Designated biological areas are illustrated in the maps in Figures Vol. 2-13, 2-15, and 2-17 for the three siting options.

Vegetation

In the northern end of the property, most if not all, of the existing vegetation near the bluff and lake would be removed for the excavation of the bluff and to provide space for the new SCPC units, coal storage areas, and other ancillary facilities. South of the existing power plant units, another community of old field vegetation would need to be cleared if the wallboard plant for the North Site were to be built.

Woodland

Selection of the North Site for the SCPC and IGCC units would eliminate the woodland area south of Elm Road and divide the woodland area north of Elm Road.

In addition to the loss of designated biological areas in the PEC, some of which is now wooded, on the north side of the property, the expansion of the existing rail loop and the construction of a new rail car dumper and indexer for the ERGS at the North Site would affect the CSH and INRA-designated 17.5-acre wooded parcel located inside of the rail loop. If the North Site were selected, the new track and car dumper would be constructed on the inside of the existing loop track, affecting 1.65 acres of the existing wooded

area. Some large sugar maple, beech, and basswood trees would be removed from the rail loop woodland, including about six trees with diameters of at least 24 inches. The blue-stemmed goldenrod, an endangered species, is not located within the area to be impacted by the proposed rail work connected with use of either site.

A majority of the woods would be lost from the INRA/CSH at the existing terminus of the WEPCO rail loop if the wallboard plant is built later. The exact amount would depend on the size and shape of the plant.

Wetlands

The majority of wetland impacts would be caused by the removal of the bluff area for construction of the SCPC units. This construction would require elimination of some of the property's highest quality wetlands located within the PEC. The construction of the ERGS would require approximately 18.78 acres or 22.5 percent of the current wetlands be filled. Vegetation in many of the remaining wetlands would experience secondary impacts including changes to the area's hydrology, impacts to water quality, wildlife habitat, and the introduction or encouragement of the proliferation of non-native/invasive species. ERGS impacts to the wetlands are further detailed in Chapter 8.

Grassland

Regardless of the site selected for the ERGS, the grassland areas on the fly ash landfills would be disturbed during construction by using them as soil repositories, laydown areas, and construction parking. These alternatives would result in the removal of grassland habitat either permanently or temporarily.

The former Oak Creek South Landfill has been closed and reclaimed by planting with perennial grass and herbaceous species. This area would be covered with soil stockpiled from the excavation of the proposed ERGS SCPC units. It would then be used as a construction laydown area. Vegetation impacts in and around the former landfill would be heavy during the term of the plant construction while the berms are built. However, vegetation similar to that on the closed landfill would eventually be established on the stockpiled soil berm, and re-established on top of the closed landfill after its use for construction laydown.

No determination has been made yet as to which plant species might be used to reseed the grasslands or to seed the new soil stockpiles and berms. The composition of the grassland seed mix chosen for replanting, must comply with the DNR Bureau of Solid Waste guidelines. WEPCO has had success for two decades in using a heavy rate of Kentucky 31 tall fescue to seed its ash landfill facilities. It has had success in establishing grasslands at WEPCO landfills using a seed drill. The grassland areas would likely be seeded using an appropriate technique necessary to establish a good ground cover for the edaphic conditions found at each area. However, the benefit might not be enough to be considered as a mitigation action to offset habitat losses elsewhere. Projected wildlife impacts and recommendations for minimizing them through grassland care are discussed in chapter sections below.

Any grassland formed following the creation of these soil placement areas would be mowed periodically to maintain herbaceous plant species dominance. Mowing at the South Oak Creek Landfill has not occurred earlier than mid-July in recent years and typically it is done after August 1. Whenever possible, the entire grassland on a parcel would not be mowed during any one year and would not be mowed prior to August 1. The intervals between mowing could possibly be made longer, every second or third year for example. On the closed landfills, while the option of using longer intervals between cuttings can have benefits to certain

wildlife species (see the discussion under Wildlife impacts), the DNR Bureau of Solid Waste currently requires annual mowing. Using an annual cutting cycle also prohibits the option of only cutting a portion of the site in any given year, a strategy that can have positive wildlife value.

The cropped field of approximately 30 acres located just west of the railroad, east of STH 32, and north of Seven Mile Road would be partially covered by the new soil stockpile to be added. Although there would first be a soil buildup, the conversion of any of the agricultural parcels to grasslands should have a positive impact on wildlife populations in the local area. The soil stockpile would probably be planted in grassland species.

All disturbed areas on the site would be re-vegetated with various trees and grasses to stabilize the site. WEPCO's overall approach to the re-vegetation of the property would be to create an "aesthetically enhanced" landscape while preserving woodlands, streams, and other existing natural features if possible. Trees, shrubs and grassy areas would be planted. Also new physical features would be formed to enhance the aesthetics of the site. For example, one purpose of the new soil berms would be to block the main elements of the plant from public view. These berms would be shaped, compacted, and seeded, probably to grassland species and plants suited for slope stabilization.

Wildlife

Construction of the ERGS units, particularly the two SCPC units, would potentially destroy bluff and beach, woodland, grassland, old field, riparian, wet meadow and shallow marsh habitat. The wildlife species that use these areas would be forced to relocate to other habitat areas on or off the WEPCO property.

Habitat Fragmentation

Selection of the North Site for the SCPC and IGCC units would eliminate approximately 80 acres of PEC consisting of old field, woodland, bluff, beach and wetlands. Part of this acreage would be lost to the new coal piles and new soil berms. The remaining PEC land would be split into two main areas on either side of the existing North Oak Creek fly ash landfill. These blocks of PEC would be oddly shaped and smaller than their present situations, creating more edge that would have a negative impact on area-sensitive wildlife species such as forest interior birds and amphibians. The smaller habitat areas would still support generalist wildlife species and force the area-sensitive species to find new areas, mainly off-property. In addition, the proposed screening berm on the north side of the OCPP property would potentially create a barrier for smaller wildlife species like frogs and salamanders trying to reach habitat areas off property.

Part of the PEC would be lost in the southern part of the property if the wallboard plant were constructed. The wallboard plant would eliminate 5.4 acres of the PEC, mainly old field and shallow marsh. This would force wildlife to travel longer distances in marginal or unsuitable habitat to reach other suitable habitat blocks. This additional traveling would increase the exposure to predators and human factors that could lower survival rates. However, the portion of PEC to be removed would not be significant to the overall PEC in the property because the portion to be removed is located on the edge of the corridor. This impact would not increase the amount of edge habitat significantly, and the remaining habitat block south of the existing power plant units would still be suitable habitat for area sensitive species.

Loss of the PEC in these two areas would further fragment the remaining PEC and increase the amount of edge habitat. This would increase impacts on area sensitive species such as forest interior birds and

amphibians. For birds, the main impacts would be increased nest predation and nest parasitism, lowering nest success. For smaller wildlife species such as amphibians, the main impact would be to increase predator pressure, lowering survival rates.

Woodland

Selection of the North Site for the SCPC and IGCC units would eliminate the woodland area south of Elm Road and divide the woodland area north of Elm Road. The remaining woodland would still provide habitat for wildlife, but mainly for species that are accustomed to disturbance such as raccoon, opossum, or deer. It would be less suited for species that are more sensitive to disturbance and habitat size, such as forest interior birds or amphibians.

The woodland area on the north site around the North Oak Creek landfill has wetlands in and adjacent to woodlands. This combination of environments helps to support several amphibians that use woodlands, like salamanders, spring peepers, and eastern gray tree frogs. The woodland area provides cover and the wetland areas provide breeding areas. The North Site plan would divide the woods and create an open area between the remaining woodland blocks. This would reduce the amount of cover for the amphibians and would result in the remaining woodlands being separated from portions of the wetlands, limiting access to these breeding areas. This situation would have the potential to limit the amphibian population growth by reducing breeding opportunities.

About 2.9 acres of woodlands west of the railroad tracks would be removed. This woodland provides habitat for birds, mammals, amphibians, and reptiles. The loss of a portion of the woodland would increase the edge habitat, negatively affecting area-sensitive species such as forest interior birds and amphibians. Species (e.g., raccoon, deer, opossum, etc.) that are accustomed to disturbance, like raccoons, deer, or opossums, would adjust to the reduction in woodland habitat. The combination of the woodland and the adjoining shallow marsh provides good habitat for woodland amphibians like salamanders or spring peepers. The increase in edge habitat would have the potential to increase predation on the amphibians. However, the increase is not likely to be severe due to the small impact of the clearing.

Wetlands

As discussed in the Vegetation section of this chapter, construction of the SCPC units at the North Site would eliminate the shallow marsh and wet meadow habitat on the lakeshore, converting it into a storm water pond with deeper, open water and eliminating the existing plant structure. Wildlife use of the wetland would change. New species using the pond would include ducks, mergansers, geese, coots, snapping turtle, bullfrogs, leopard frogs, painted turtle, great blue heron, gulls, and shorebirds. It is likely that, eventually, the pond would become populated with game fish like bass and bluegills that would also provide food for herons and mergansers. On the other hand, the addition of fish like bass, blue gills, and so forth would adversely affect the amphibian population because the fish would eat amphibian eggs.

The soil relocation would fill in wetlands along the creek west of the railroad tracks, regardless of the power plant site selected. The removal of these wetlands would force the associate wildlife to relocate.

Grassland

Using any of the six soil placement areas on the OCPP property, regardless of site option selected, would affect wildlife habitat. Conversion of the agricultural parcels to grasslands would likely be considered to be

beneficial from a wildlife perspective. Conversely, wetlands converted to uplands would adversely affect some wildlife species while others respond in a positive manner. The South Oak Creek landfill grassland would be temporarily replaced with additional soil being added and used as a laydown area, but ultimately this area would be returned to grassland following site construction. Wildlife using the existing grasslands would be displaced during this construction period.

If the grassland habitat on the landfills were removed permanently, grassland songbirds and other grassland wildlife species would be forced to relocate. Because of the lack of grassland habitat in the surrounding landscape, wildlife would find it difficult to find suitable habitat in which to relocate. Wildlife would be forced to move into overcrowded habitat or use marginal habitat, potentially lowering reproductive and survival rates.

If these areas are only temporarily disturbed, it is possible that steps could be taken to enhance the area to support grassland songbirds again through plantings and a change in the mowing schedule. Grassland songbirds require areas with medium to tall grasses that are fairly dense. This could be achieved by re-planting these areas with cool season grasses like brome grass or Canada wild rye or warm season grasses like big bluestem or switch grass, with some species that flower and attract insects. The grasses would provide the birds with structure for nests, perches for singing, sources of food, and cover for resting. Other flowers would attract insects that provide an additional food source for the birds.

Changing the timing and frequency of mowing can potentially improve habitat for songbirds. The Oak Creek landfills are mowed one to two times a year to keep the areas free of woody vegetation. Grassland songbirds nest between April 15 and July 15. Any mowing during that time would destroy nests and possibly nestlings. Mowing prior to April 15th could also eliminate that year's potential nesting cover or delay nesting until the grass cover has reached a suitable height. The following mowing options, in order of DNR wildlife staff preference, can help grassland songbirds:

1. Mow the landfill sites in alternating years, every one to two years. This would promote more dense nesting cover for grassland songbirds and other grassland nesting birds like ducks.
2. If yearly mowing is necessary, divide the landfills into several units and mow one unit each year on each landfill. The remaining un-mowed units will still provide residual grass for in which birds can nest.
3. Mow only once a year, after July 15, to allow some grass cover to grow back for the following spring.
4. Mow after July 15 to avoid destroying nests or nestlings.

The loss of these grassland areas would also impact other wildlife species, like voles and snakes, forcing them to relocate during construction, temporarily or permanently. Many of the non-bird wildlife species that use the grasslands on the OCPP property (toads, weasels, vole, or foxes, for example) use multiple habitat types and might be able to re-locate into adjoining habitats temporarily. If the landfill grassland habitat were restored, these species could re-colonize the area.

If the cover were permanently removed or buried, the wildlife using the area would have to stay in overcrowded habitat or relocate off property. Relocation for specialist species would be very difficult due to the lack of grassland habitat in the surrounding landscape.

Bluff and beach

The SCPC units would require the elimination of 700 feet of the Lake Michigan beach. Its removal also is discussed above as related to removal of PEC land. The removal would take away habitat for gulls, geese, ducks, deer, raccoon, and opossum. It would also remove migration and wintering habitat for waterfowl, shorebirds, terns, and gulls. The loss of beach area would eliminate roosting and feeding areas for migrating birds like gulls or shorebirds. Shorebirds and gulls would have to find new locations for stopover during migration.

Riparian impacts

Construction on the North Site would replace a portion of the riparian area in the north end of the OCPP property by the proposed construction parking area. This would result in the loss of cover, food, and nesting or den sites for birds, mammals, reptiles, and amphibians. It would also reduce and interrupt the travel corridor that the stream serves.

South Site

If the South Site is selected, there would be losses to beach, bluff, grasslands, wetlands, and woodlands. Unlike the North Site, the excavations for the SCPC units would occur on already disturbed land. The IGCC unit would however impact designated biological areas and the proposed wallboard plant would be located over the majority of the northern PEC. Potential impacts to areas of biological concern are illustrated in Figure Vol. 2-16.

Topography and soils

The proposed South Site layout of excavation and soil build-up is shown on Figures Vol. 2-15 and 2-16. As with the North Site, excavation would be necessary for both the SCPC units and the IGCC unit.

SCPC units

Excavation for the two SCPC units would total about 5.8 million cubic yards. It would result in an excavated base for the units of about 34 acres. The slopes would climb about 80 feet over a distance of about 200 feet so that the overall excavated area would be about 48 acres.

The disposal of soil excavated for the SCPC units would be in the areas 1, 2, 3, and 4 as listed above for the North Site and shown in Figures Vol. 2-15 and 2-16.

IGCC unit

WEPCO's site grading plans for the construction of the IGCC facility at the South Site (with the IGCC facility located entirely on WEPCO property) would call for excavation of an additional 1.5 million cubic yards of soil.

The wallboard plant for the South Site would be located on the northern, Elm Road portion of the site, north of the existing OCPP plant. The bluff would be stabilized when and as needed if a company agreed to build such a plant at a later date. Such construction details are not a consideration at this time because there is no actual plan for WEPCO or anyone to build the plant.

The underlying cause of bluff erosion is erosion of the toe of the bluff and the near shore lake bed caused by the action of waves on Lake Michigan. This erosion would be addressed with a combination of stone revetment structures and retained beaches as required.

Designated biological areas

The South Site, if chosen would impact over half of the northern PEC and an additional 9.6 acres of the southern PEC. The excavation and construction of the IGCC would result in the removal of all of an INRA/CSH-designated area in the southern part of the property. The location chosen for the wallboard plant in this alternative would remove approximately half of the northern PEC, further dividing the corridor.

Vegetation

Woodland

If the South Site is selected, the new track and dumper could be constructed outside of the existing rail track, so the trimming of the woodland south of this area would affect only 0.16 acres of the wooded area.

The northern property woodlands, north of Elm Road near the lakeside, would be cleared if the prospective wallboard plant is built.

The construction of the IGCC and the portion of the railroad loop that would connect back to the main line would eliminate 6.3 acres of a 7.1-acre woodland and associated wetlands (sedge meadow, pond, and wet meadow) associated with a designated INRA./CSH and would completely remove a smaller CSH located near the Lake Michigan shoreline.

Wetlands

As discussed in Chapter 8, wetland losses would total 15.84 acres or 19 percent of the property's total wetlands. In addition to filling in some wetlands, other wetlands would experience secondary impacts.

Grassland

As with the North Site arrangement, the grasslands that would be affected would be those that are associated with the existing closed landfills on the property. The effects would be similar to those from the North Site arrangement except for small differences in the changes to the North Oak Creek landfill and for the lack of a projected new soil stockpile (and so lack of a projected new grassland) next to the switchyard.

Old field

The construction of the plant at the South Site would result in the loss of some old field in the southern portion of the OCPP property. The IGCC construction would lead to some old field loss as part of a loss of PEC land. The wallboard plant, if constructed, would eliminate additional old field PEC land in the northern end of the property.

Wildlife

WEPCO would place the SCPC and IGCC buildings directly south of the existing power plant facilities on the lakeshore. Locating the buildings in this area would directly impact woodland, pond, beach, wet meadow, shallow marsh, and old field habitats. Wildlife using these areas would be forced to relocate to other habitat areas on property or off property.

The new power plant buildings would isolate the south side of the OCPP from the north side for smaller wildlife species like frogs, salamanders, turtles, and voles. The proposed building site areas would be unsuitable travel corridors for smaller wildlife, exposing them to high levels of danger from equipment, cars, and so forth. This barrier would result in area-sensitive species becoming isolated in smaller blocks of habitat, increasing the potential for these species to be eliminated from the property if the specific habitat type continues to decrease in size.

Habitat fragmentation

The SCPC buildings and excavation would probably not affect the PEC in that area. However, the IGCC buildings along the lakeshore would result in the removal of the northern portion of the corridor along the lakeshore. The corridor impact is on the northern edge of the existing corridor, which would minimize impacts to the overall corridor. The potential building site and IGCC storm water facilities would eliminate a small acreage of PEC in that part of the property. The loss of this area would reduce the travel corridor for wildlife and force animals to travel a slightly longer distance in marginal or unsuitable habitat to reach similar habitat blocks. This additional traveling would increase exposure to predators and human factors that could lower survival rates.

The South Site could eliminate a total of approximately 66 acres of the PEC in the north end of the OCPP property, from the creation of construction parking, the potential construction of the wallboard plant, and the coal piles. The PEC areas consist of woodland, old field, and wetland along the lakeshore, and woodland and wetlands off the lake. The remaining corridor land, 49 acres, would be west of the existing North Oak Creek fly ash landfill and would consist mainly of wetlands and woodland. It would be shaped like an “L” with the width under 500 feet at its widest point. Although the remaining block of corridor would still provide good habitat for wildlife, the screening berm on the north side of the OCPP property would potentially create a barrier for smaller wildlife species trying to reach habitat areas off property.

Woodland

The construction of the IGCC and the portion of the railroad loop that would connect back to the main line would eliminate 6.3 of the 7.1-acre woodland and associated wetlands (sedge meadow, pond, and wet meadow) in the INRA/CSH at the southern end of the rail loop. The wildlife species that use this area would be forced to relocate to other sites on or off the property. The small portion of woodland left would likely be used by wildlife that are used to human activities, such as raccoons, opossums, squirrels, or robins. Area-sensitive species would likely be forced to relocate.

Selection of the South Site would also lead to the elimination of the majority of the woodland along the lakeshore in the northern end of the property, removing all habitats for wildlife, if the berms are built and the wallboard plant is constructed. A smaller portion of the woodland would be preserved off of the lake. This area would still provide habitat for wildlife, mainly species that are adjusted to human disturbance, but not for species sensitive to disturbance and habitat size. Area-sensitive wildlife would be subject to edge effects in the smaller woodland, such as increased predation, nest parasitism and nest predation.

Wetlands

Most of the wetlands that would be affected by construction on the South Site are small in size, under one acre. Typically these areas support generalist species, which use varied habitat types, and a few specialist species. The loss of these areas would force the wildlife to relocate to other areas.

The combination of the woodland and the wetlands in the woodland in the INRA/CSH near the rail loop terminus is likely to support woodland amphibians like salamanders, spring peepers, and eastern gray tree frogs. All three site options would require filling in the wetlands within the seven-acre woodland and clearing all or most of the woodland, eliminating potential habitat for the amphibians. Any amphibians using the area would be forced to relocate or be destroyed.

Individually, the loss of a small wetland might not have a significant impact on wildlife, but the cumulative loss of all these wetlands in the north and south ends of the OCPP property would have a significant impact on wildlife use in the area.

Bluff and beach

Use of either of the South Site options would result in minor impacts to the bluff or the beach. The shoreline where the SCPC units would be installed is now covered in rip rap.

Riparian habitat

Use of either of the South Site options would remove approximately 1,900 feet of the stream running through the woodlands, for the potential commercial wallboard plant. This would result in the loss of riparian habitat for birds, mammals, reptiles, and amphibians. The cleared area would also create a barrier between the remaining corridor and the beach area.

South Site-Exp

The only difference between the South Site option and the South Site-Exp option involves the utilization of the shooting range property. If the shooting range were purchased by WEPCO for construction of the ERGS facilities, environmental studies would be required, and the shooting range would be relocated to another property (probably necessitating additional environmental studies). A potential area for relocation is a former horse farm located on the north side of Seven Mile Road abutting WEPCO's property.

Topography and soils

SCPC units

As can be seen in Figures Vol. 2-17 and 2-18, the excavation dimensions and volume for the two SCPC units would be the same as that for the South Site described above. The placement of the SCPC excavation materials, the dredged materials from the harbor, and the material from the intake tunnel would be the same also.

IGCC unit

Figure Vol. 2-3 shows also, however, that the grading plan for the South Site-Exp has the IGCC facility sited on what is presently the shooting range property. For the South Site-Exp, soil placement would occur in repository areas 1 through 4 and 6 as listed above for the North Site (in other words, all but the repository site east of the railroad and south of the switchyard) and on a portion of the shooting range property south of the IGCC buildings. A new set of berms would be constructed about 40 to 50 feet high to frame a new shooting range south of the present location, on land presently owned by WEPCO north of Seven Mile Road.

The IGCC would require excavation beyond the volume generated by excavation for the SCPC units. About 9.8 million cubic yards total (for all three units) would be excavated, almost as much as required for the North Site. About 4.0 million cubic yards total would be excavated to accommodate the IGCC. Some of this material would come from excavating the bluff, and some would come from grading the present shooting range property.

Vegetation

There would be differences between the vegetational changes resulting from construction at the South Site and construction with the expanded IGCC footprint at the South Site-Exp.

In the southern portion of the OCPP property, the construction of the IGCC would result in removal of larger portions of the two southern INRAs/CSHs (south end of rail loop, and west end of rifle range), both of which are woodland and wetland associations.

Woodlands, wetlands, and old field vegetation north of Elm Road would also be removed to the extent that they were needed for coal pile construction and construction of the potential wallboard plant.

All three site options would require the removal of about 2.9 acres of woodland west of the railroad, from soil stockpiling.

Grassland

Grasslands would be affected by the construction at the South Site-Exp because there would be more soil excavated. Not only would the soil stockpile near the switchyard be used, but the soil stockpile on the existing cropland toward Seven Mile Road would be bigger than that for the South Site. Soil stockpile areas would be planted as grasslands.

Wildlife

Construction at the South Site-Exp would place the SCPC and IGCC buildings south of the existing power plant facility on the lakeshore and spread them southward over more acreage than the South Site. The buildings would affect both existing WEPCO property and the existing rifle range property. Habitat types affected would include woodland, old field, wet meadow, shallow marsh, bluff, and pond. Wildlife using these areas would be forced to relocate to similar habitat on the WEPCO property or off property.

Expansion of the power plant buildings on the south side of the existing power plant facility would increase the distance between the habitat blocks on the north and south sides of the OCPP property. This would make travel between the north and south sides of the property more difficult for smaller wildlife species like frogs, salamanders, turtles, or small mammals. The proposed building layout would not provide suitable areas for wildlife to travel northward, exposing them to increased levels of danger from equipment or cars, for example. This barrier would limit movement of the specialist species, potentially causing these species to be eliminated from the local habitats on the north or south sides of the OCPP property.

Habitat fragmentation

The potential building sites would eliminate the northern portion of the southern PEC that consists of old field, wet meadow, bluff and shallow marsh. The buildings would eliminate about twice as much PEC land as building on the South Site. The loss of this area would reduce the travel corridor opportunities, forcing

wildlife to travel a longer distance in marginal or unsuitable habitat to reach other suitable habitat blocks. This additional traveling would increase wildlife's exposure to factors that could lower survival rates, such as predators or human factor impacts like cars, cats, or dogs.

Removing this area would reduce the size of the migration stopover sites for birds on the property because of the loss of sedge meadow, old field, pond, shallow marsh, and the seven-acre hardwood woodland. The quality seven-acre woodland near the rail loop terminus (see Table 10-9) provides important stopover habitat.

While the woodland is not significantly large it is a natural community that provides the necessary diverse plant structure and food sources. Migrating birds would be forced to use other similar habitat for stopover sites on or off the OCPP property. Reductions in stopover habitat means migrating birds would be forced to use overcrowd existing stopover sites or marginal sites. Some of these areas might not have all the necessary food and shelter or might be overtaxed by other birds' use. Without the necessary resources, the bird's journey becomes more difficult and potentially fatal. The difficulties potentially could increase stress on fatigued birds, making them unfit to continue the journey or making them reach the breeding grounds in poor condition for breeding.

The plant constructed at the South Site-Exp would impact the PEC in two locations, on the north side and in the middle of the PEC south of the existing facility. The northern impact would remove approximately 10 acres of corridor consisting of shallow wetland and old field. The second impact, approximately four acres, would cut off a finger portion of the 33-acre woodland, interrupting the PEC. However, the woodland north of the impact would still be large enough to be used by specialists and would still be connected with the remaining portion of the corridor along the lakeshore.

The plant at the South Site-Exp would eliminate a 5.3-acre woodland, part of the INRA/CSH at the end of the WEPCO rail loop and approximately four acres of the INRA/CSH woodland and stream corridor at the west end of the Rifle Range.

Woodland

The woodland south of the proposed plant construction site is smaller and disconnected from the rest of the corridor by about 400 feet. This area would be more suited for generalist wildlife species. Wildlife would have to travel in marginal or unsuitable habitat to reach the remaining habitat area. This additional traveling would increase exposure to factors that could lower survival rates, such as predators like hawks or human factor impacts such as cars or pets.

The plant at the South Site-Exp would eliminate the 7.1-acre hardwood woodland with associated wetlands in the INRA/CSH at the terminus of the rail loop. It would also eliminate the woodland portion of the INRA/CSH west of the existing shooting range (5.3-acres) and a portion of the woodland INRA/CSH associated with the ravine south of the shooting range property. The wildlife species that use these areas would be forced to relocate to other sites on property or off property.

The above woodlands, smaller and by themselves not likely to provide much habitat for forest interior birds, are nevertheless in close proximity to a larger block of woods INRA surrounding the ravine south of the shooting range. For this reason, forest interior birds are likely to use the smaller woods. Loss of the smaller woodlands would force forest interior birds to find new locations.

The INRA west of the shooting range consists of a woodland and shallow marsh that provides cover and breeding areas for amphibians like salamanders, spring peepers, and eastern gray tree frogs. The elimination of the woodland would eliminate the local population of amphibians using the woodland and the wetland.

Wetland

Wetland impacts would be as described above.

Riparian

The power plant at this site would impact two stretches of stream, one 500 feet and the other 200 feet, and the woodland surrounding these streams. This would result in the loss of habitat for birds, amphibians, reptiles and mammals. In particular, it would remove good foraging areas for birds like swallows, flycatchers, kingfishers, or herons, which feed on insects and fish. It would remove good foraging areas for mammals like raccoon, opossum, or mink, which feed on fish and crayfish. It would also remove good foraging areas for amphibians like frogs, which feed in insects, and reptiles like turtles or snakes, which feed on fish and insects. It will also remove cover for birds, amphibians, reptiles and mammals.

Existing Environment and Potential Impacts in the Railroad Corridor

The railroad corridor runs through mixed residential and agricultural lands. The topography is generally level but gradually sloping downward to the south. The geology of this area is the same as that on adjacent lands. The railroad track lies on a raised bed of gravel with the ground surface sloping downward away from the track. Shallow ditches parallel the track on both sides. Soil types consist of primarily silt loams and silt clays. The railroad corridor is a highly disturbed area with many invasive and non-native species. Vegetation along the corridor consists of shrubs, wetland plants, and prairie plants and grasses in upland areas (refer to Chapter 8).

Wildlife within the railroad corridor is consistent with those species identified in the surrounding areas, mostly generalists because of the level of disturbance related to corridor maintenance. There are no identified endangered or threatened species known to occur within the railroad corridor. As discussed earlier in this chapter, archeological sites have been identified in the area, but the WHS has concluded that no adverse impacts would be expected.

The railroad corridor would change little with the exception of the proposed underpass at Six Mile Road and the overpass at Seven Mile Road. The geology of the corridor would remain unchanged. The primary vegetative impacts would be due to the proposed filling in of wetlands and the removal and reconstruction of drainage ways. The construction of new drainage ways for both Six and Seven Mile Road would impact the quality of the stream and habitat. The construction of new drainage ways within the corridor where wetlands would be filled in, would most likely increase the number and density of invasive and non-native species in the remaining wetlands. This, in addition to erosion caused by construction activities, would further degrade the wetlands and stream habitats adjacent to the railroad corridor. Impacts to wildlife within the railroad corridor would be expected to be minimal due to the current degraded nature of the vegetation and provided that construction activities were limited to the railroad corridor.